

## REMARKS

In the patent application, claims 1-25 are pending. In the office action, all pending claims are rejected.

Applicant has canceled claims 2, 3, 9, 10 and amended claims 1, 4-8, 11-18 and 21.

Claims 1 and 8 have been amended to include the limitations that

the light sheet has a plurality of light beams provided by a first light providing structure and a second light providing structure, wherein each light providing structure has a light source for providing a source beam along the longitudinal axis of the light providing structure and a plurality of partially reflecting surfaces distributed along the longitudinal axis to partially reflect the source beam for providing the light beams in the light sheet and that

a first light detecting structure is disposed behind the second light providing structure for measuring the light intensity of light beams provided by the first light providing structure, and a second light detecting structure is disposed behind the first light providing structure for measuring the light intensity of light beams provided by the second light detecting structure. The support for the amendment can be found in Figure 3.

Claims 1 and 8 have also been amended so that the light sheet is partially blocked when the object intrudes into the air space. The support for the amendment can be found on p.9, lines 28-30.

Claims 5, 6 and 12-14 have been amended to change the claim dependency. Claims 4, 19 and 21 have been amended to change the wording. Claims 7 and 16 have been amended to include two more light providing structures and two more light detecting structures as shown in Figure 2.

No new matter has been introduced.

At section 5 of the office action, claims 1 and 8 are rejected under 103(a) as being unpatentable over *Muraoka* (U.S. Patent No. 6,538,644), in view of *Cok* (U.S. Patent No. 7, 042,444).

In rejecting claims 1 and 8, the Examiner states that *Muraoka* discloses a light detection system as claimed, except that *Muraoka* fails to disclose providing a light sheet in an air space

over the touch pad. The Examiner points to *Cok* for disclosing a touch screen in which a light sheet is provided in an air space over the touch pad. The Examiner states that it would be obvious for one of ordinary skill in the art to replace the light sheet taught by *Muraoka* with the light sheet taught by *Cok* such that, instead of light being transferred through a polymer sheet, light would be transferred in air in order to reduce the device thickness and minimize the degradation in image quality.

It is respectfully submitted that *Muraoka* uses a polymer sheet as a touch panel to transmit polarized light from one side of the sheet to the opposite side. When the polymer sheet is depressed, the polarization direction of part of the transmitted light is turned by 90 degrees due to double refraction (Figure 5, col.3, lines 28-37). Using a detector with a polarized sheet at the end of the transmission path to detect the transmitted light intensity, the depression of the sheet can be detected.

*Muraoka* is different from the claimed invention in many aspects:

1. In *Muraoka*, light beams must be transmitted in a sheet of optical material that has an optical property of double refraction. In contrast, the light sheet in the claimed invention is provided in an air space. Air does not have the optical property of double refraction.
2. In *Muraoka*, the object must physically touch the sheet in order to block the light beam. In contrast, the intensity of the light sheet is reduced when the object intrudes into the air space.
3. *Muraoka* does not disclose or suggest that the light intensity in the light sheet is spatially varying.

*Cok* discloses an OLED display and touch screen system wherein one or more OLED emitters are used to provide one or more light beams and one or more light sensors are used to detect the one or more light beams in an air space above the touch screen.

The “air space” feature of *Cok* cannot be used in *Muraoka* because the principle of operation in *Muraoka* requires a sheet of material that has the optical property of double diffraction. Without the double diffraction property of the polymer sheet, *Muraoka* is inoperable. There would be no motivation for one skilled in the art to apply the air space feature

in *Cok* to the touch screen of *Muraoka*. If one applies the air space feature of *Cok* to the touch screen of *Muraoka*, it would completely change the principle of operation in *Muraoka*.

If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the reference are not sufficient to render the claims *prima facie* obvious. See MPEP, 2143.01(VI).

Furthermore, *Cok* fails to disclose that a first light detecting structure is located behind the second light providing structure to measure the light intensity of the light beams as provided by the first light providing structure through the second light providing structure, and that a second light detecting structure is located behind the first light providing structure to measure the light intensity of the light beams as provided by the second light providing structure through the first light providing structure.

Thus, even when the light emitting/detecting features in *Cok* are combined with the touch screen device in *Muraoka*, the combination does not have all the claim elements of claims 1 and 8.

For the above reasons, *Muraoka*, in view of *Cok*, fails to render claims 1 and 8 obvious.

At section 6, claims 2-7, 9-16 and 22-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Muraoka*, in view of *Cok*, and further in view of *Amitai* (WO 01/95027). Applicant has canceled claims 2, 3, 9 and 10.

The Examiner cites *Amitai* for disclosing a light providing structure containing partial reflecting surfaces 22.

It is respectfully submitted that claims 4-7, 11-16 and 22-25 are dependent from claims 1 and 8 and recite features not recited in claims 1 and 8. For reasons regarding claims 1 and 8 above, claims 2-7, 9-16 and 22-25 are also distinguishable over the cited *Muraoka*, *Cok* and *Amitai* references.

At section 7, claims 17-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Muraoka*, in view of *Cok*, and further in view of *Graham et al.* (U.S. Patent No. 6351,260, hereafter referred to as *Graham*). The Examiner states that *Graham* discloses a light pipe having

a diffractive surface or a plurality of prismatic surfaces to convey received light to the light detector (Figure 6B).

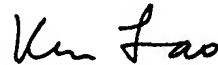
It is respectfully submitted that the light pipe 416 or 412 in Graham does not have a diffraction surface or a plurality of prismatic surfaces as shown in Figures 6a to 6d of the instant application. Instead, the light pipe as shown in Figures 6A and 6B in Graham, has a plurality of individual waveguides (such as embedded optical fibers) or channels to direct received light from one surface of the light pipe to another surface of the light pipe (col.8, lines 14-45).

Furthermore, claims 17-21 are dependent from claim 8 and recite features not recited in claim 8. For reasons regarding claim 8 above, claims 17-21 are also distinguishable over the cited *Muraoka*, *Cok* and *Graham et al.* references.

#### CONCLUSION

Claims 1, 4-8, 10-25 are allowable. Early allowance of all pending claims is earnestly solicited.

Respectfully submitted,



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